Part III: Background and Glossary

Appendix G:

Brief Guide to the Domain Name System and WHOIS

DNS and WHOIS – How it Works

The Domain Name System (DNS) is a hierarchical distributed database to lookup information from unique names, i.e. to help people connect to resources like websites and email servers on the Internet. To explain it in simple terms, every computer has a unique number called an IP address, e.g. 2620.0.2d0.200.7, which could be compared to a phone number. One computer can contact another as long as it knows its IP address. Because these numbers are difficult to remember, we tend to use domain names e.g. www.icann.org instead. DNS is used to translate between domain names and IP addresses.

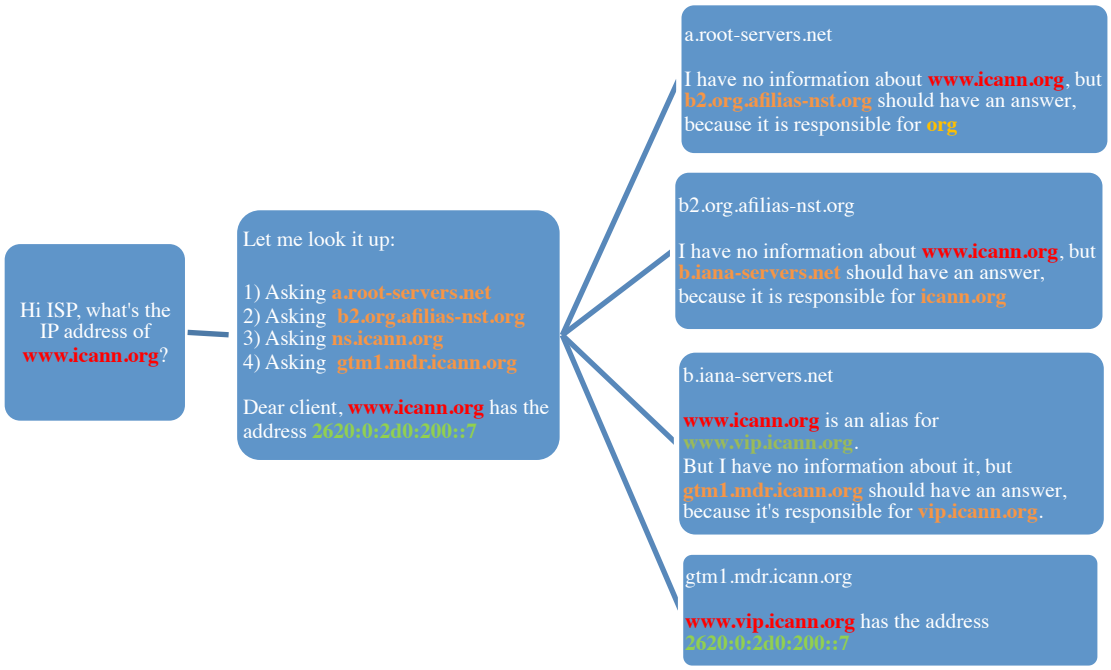
WHOIS provides information sufficient to contact a responsible party for a particular internet resource who can resolve, or reliably pass on data to a party who can resolve, issues related to the configuration of the records associated with the domain name or the DNS name servers.[1] Unfortunately the term "WHOIS" is overloaded, referring to protocols, services, and data types associated various resources, i.e., domain names, Internet Protocol (IP) addresses, and Autonomous System Numbers (ASNs).[2]

WHOIS registries are mainly run by Registry Operators, for example VeriSign who maintain the *.com* registry. IANA runs the central registry[3] for all kinds of Internet ressouces, pointing to the WHOIS server of the responsible (sub)-registry as well as the contact details of this registry.

DNS Registry operators also maintain another vital piece of information. The glue to the downside authoritative **name servers**[4] which hold the key to where a website is located. For example, if you type www.icann.org into a browser, your ISP will query the name servers starting from the hard coded root servers to find out which name servers are associated to that domain name. One of those name servers is then contacted and will return the IP address for that domain name. Your computer can now connect to the computer that will serve up the ICANN homepage. This process is illustrated below.

---

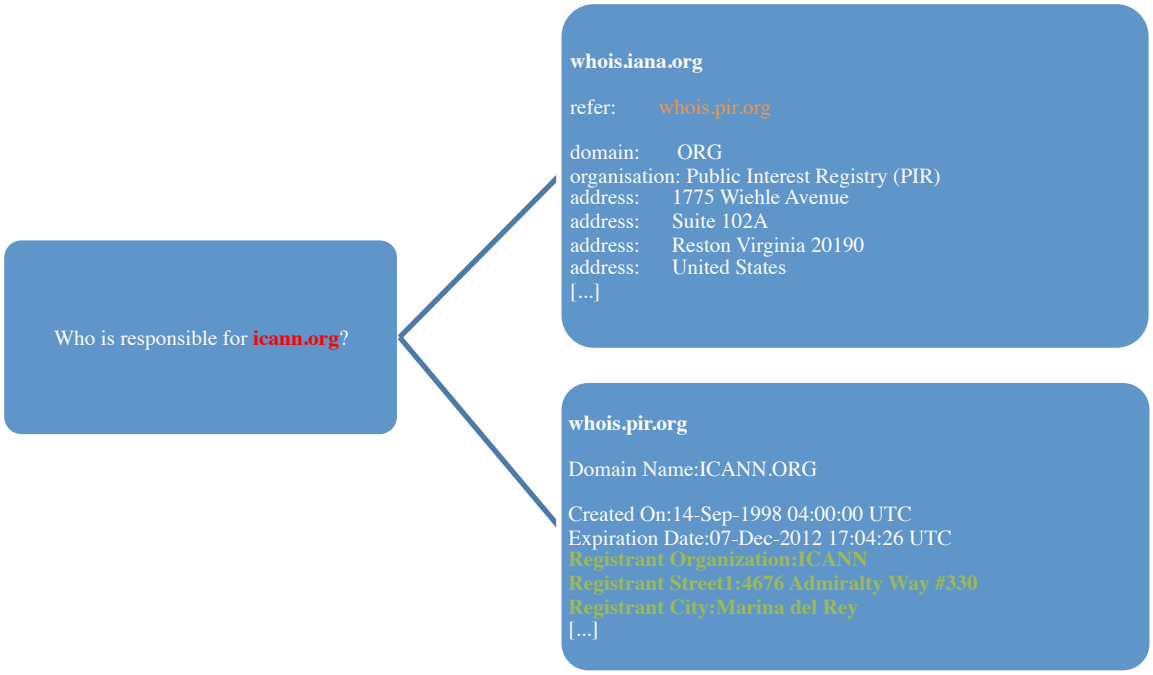
[1] http://www.icann.org/en/presentations/gnso-mar-28jun06.pdf
[2] http://www.icann.org/en/committees/security/sac051.pdf
[2] http://www.icann.org/en/committees/security/sac051.pdf
[3] whois://whois.icann.org or http://whois.icann.org
[4] Authoritative name servers are those that can give an authoritative answer on where a domain is located rather than one that has simply cached a response received from another name server.



As can be seen in the diagram, the selection of which registry operator is to be queried each time depends on an ever increasing trailing part of the domain (e.g. *.com, .net, .uk*, *co.uk, ip6.arpa*), also known as the Top Level Domain (TLD[5]). If the ISP doesn't already know it can ask from former questions which name server need to be ask for a given part of the domain name, it starts asking a **root server**. There are various root servers located all over the world which point to the appropriate downstream name servers.

WHOIS is designed to work in the same way: Starting at whois.iana.org, follow the references to the downstream WHOIS servers unless the required information is obtained. This process is illustrated below.

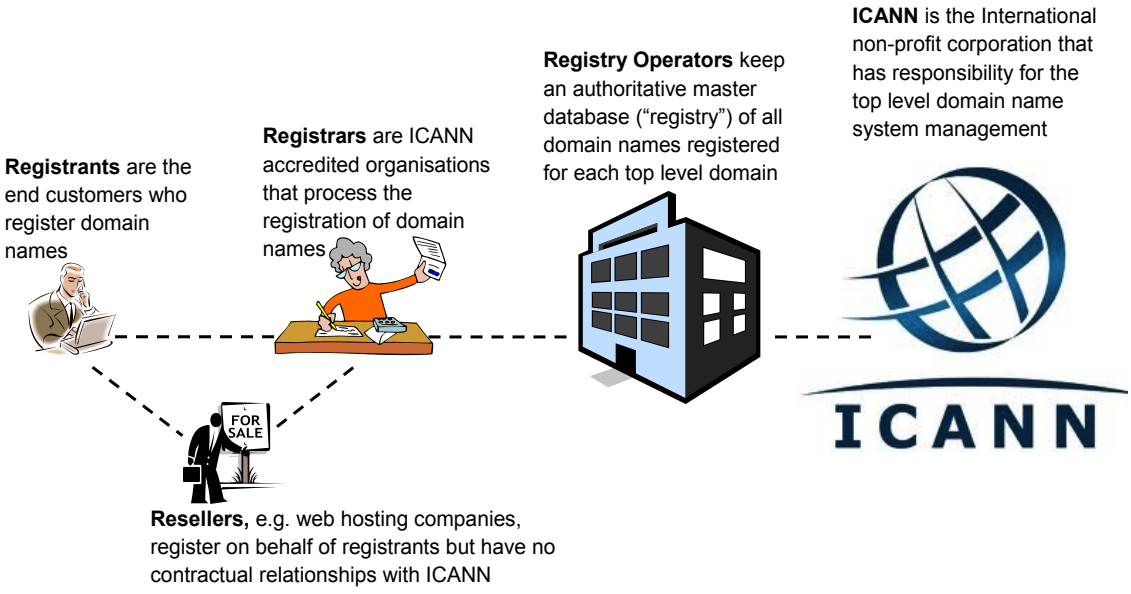
[5] This Guide covers only generic top level domains (gTLDs), which come under the control of ICANN, however there are also hundreds of country-code top-level domains (ccTLDs) such as .uk that correspond to countries or territories around the world.



The Domain Name Registration Process

Like IP addresses, domain names also need to be unique so there has to be a way of associating them with a particular person or organization. This is done through the domain name registration process. In order to reserve a domain, a registrant must register it with one of almost a thousand ICANN-accredited registrars. The registrar will check if the domain is available and create a WHOIS record with the registrant's information. It is also possible to register domains through resellers. The diagram below illustrates the main functions of the parties that are usually involved in the process.

The WHOI'S WHO of Domain name Registration



A **Registrant** is the person or organisation who has registered the domain name. In order to do so, the registrant will usually apply online to a domain registrar or one of their resellers. The registrant is bound only by the terms and conditions of the registrar with which it registers, for instance adhering to a certain code of conduct or indemnifying the registrar and registry against any legal or civil action taken as a result of use of the domain name. Registrants have certain responsibilities which should be incorporated into these terms and conditions in terms of payment of registration fees and submission and timely update of accurate data.

In addition to registering the name, they also need to have their domains listed on name servers in order to have that domain reachable on the Internet. If this service is not offered by the registrar or registrants opt out, then they are responsible for procuring or hosting their own name servers.

Registrars are organisations accredited by ICANN or certified by the registry operators to sell domains. They are thus bound by the Registrar Accreditation Agreement (RAA) with ICANN[6] - or by their agreements with the registry operators. The RAA sets out responsibilities for the registrar including maintenance of WHOIS data, submission of data to domain registries, facilitating public WHOIS queries, ensuring registrants details are escrowed or that if not possible to escrow (e.g. for some proxy and privacy registrations) that registrants are aware of this, and finally complying with RAA conditions relating to the conclusion of the registration period.

Registrars are also responsible for maintaining and publishing WHOIS information supplied by the registrant, and for periodic notifications to the registrant to verify the information is correct. Once notified that the WHOIS information may be inaccurate the registrar is required to notify the registrant to review and correct any inaccurate information in their WHOIS record. The Registrar must maintain proper contact information for itself, including a valid email and mailing address which should be posted on their website. The RAA also requires the Registrar to take compliance and enforcement action against a Reseller violating any of the required provisions.

Some registrants may opt to register through a **Reseller**. These are affiliated with registrars, and usually offer other services such as web hosting, email mailboxes etc. Resellers are only bound by their agreements with the registrar(s) whose services they sell, they are not accredited by ICANN. However, the registrar for whom they are re-selling will still be the sponsor for the domain name registration and accountable for the domains sold by the re-seller.
Under the 2009 RAA, registrars must include specific items in their agreements with resellers, such as identification of the sponsoring registrar and all of the same provisions that the registrar is required to include in its agreements with domain name registrants.
While Registrars are contracted to conduct the day-to-day business of selling domain name registrations, **Registry Operators** are responsible for maintaining the registry for each TLD. The responsibilities of the registry operator include accepting registration requests (whether from registrars or directly from registrants), maintaining a database of the necessary registration data and providing name servers to publish the zone file data (i.e. information about the location of a domain) throughout the Internet.

[6] An ICANN accreditation is currently granted for a term of 5 years. In order for a registrar to maintain its accreditation, it must renew its RAA every 5 years. This means that the 2009 RAA might not be applied to all existing registrars before 2014.

Finally, the **Internet Corporation for Assigned Names and Numbers** (ICANN) is the international non-profit corporation that oversees the assignment of both IP addresses and domain names. It has responsibility for managing root server and TLD name system management and has contractual agreements with both registries and registrars.

How to Do a WHOIS Look-up

WHOIS 101

As many consumers use search engines to find information on the Internet, they may not be aware of the term "WHOIS" to use in a search engine. Even when "WHOIS" is applied to a search engine, all sorts of responses appear. Most of the search engine results, particularly those at the top of the search result hierarchy, link to webpage of registrars attempting to sell domain names and related services. It is not at all intuitive how to find the domain registrant information

By way of example, a Google search for "WHOIS lookup" (searched – date-) provides the following:

WhoIs Domain Lookup - Search available Domains | GoDaddy.com

www.godaddy.com

Free Hosting w/Site Builder & more.

Search Results

WHOIS Search for Domain Registration Information | Network ...

www.networksolutions.com/whois/index.jsp - CachedSimilar

For a small monthly fee, we'll act as your proxy — which means that anyone who does a *WHOIS lookup* for your domain name information will find our contact...

Whois Lookup | Domain Availability - Registration Information

who.godaddy.com/ - CachedSimilar

Search the *WHOIS* database on the World's Largest Domain Name Registrar. Find out domain availability or contact the current owner of the website you are ...

Whois - IP Address - Domain Name *Lookup*

cqcounter.com/whois/ - CachedSimilar

...

Whois Lookup - Domain Names Search, Registration, & Availability ...

www.whois.net/ - CachedSimilar

Whois.net, Your Trusted Source for Secure Domain Name Searches, Registration, Availability & More. Use Our Free *Whois Lookup* Database To Search For ...

Whois By IP Address - Whois domain tools - Your IP Address - Ping

Whois Lookup & Domain Availability Search | DomainTools

whois.domaintools.com/ - CachedSimilar

Research domain ownership with *Whois Lookup*: Get ownership info, IP address management, rank, traffic, SEO, & more. Find available domains & domains for ...

WHOIS Lookup for Domain & IP Address Research | Whois Source
www.whois.sc/ - CachedSimilar
Discover who is behind a Website or IP Address by using our *WHOIS* Database Search. Domain Availability, History, Website Thumbnails, and more.

Internic | *Whois*
www.internic.net/whois.html - CachedSimilar
Oct 22, 2001 – *Whois* Search. *Whois* (.aero, .arpa, .asia, .biz, .cat, .com, .coop, .edu, .info, .int, .jobs, .mobi, .museum, .name, .net, .org, .pro, and .travel): ...
Who.is: *Whois Lookup*, Website, Domain Name, and IP Tools - Who.is
who.is/ - CachedSimilar
Who.is has a large suite of tools related to whois, *whois lookup*, websites, domain names and ip addresses.
Whois.com - Domain Names & Identity for Everyone
whois.com/ - CachedSimilar
Whois lookup, domain name search, domain name registration, available domain names, domain whois database information.
Whois Domain Lookup Search - *Whois Lookup*: Find Who ...
www.register.com/whois.rcmx - CachedSimilar
Whois domain lookup search - find out who registered a website and check a domain name with our *Whois lookup* tool.

.com and .net are “Thin” WHOIS registries meaning that within these registries, there is not a single source for complete WHOIS information for each of the domain names having the .com and .net TLD. Rather the complete (“Thick”) WHOIS data is available only from the registrar from whom the domain name was purchased. There are hundreds of registrars that register .com and .net TLD domain names, so Thick WHOIS data is distributed among hundreds of WHOIS databases for these domain names.

An interested consumer knowledgeable about WHOIS databases will likely have to go through several steps to find the complete (“Thick”) WHOIS record for a specific .com and .net domain name. Because .com reflects the registry having the largest by far population of domain name registrants, and .net a close second (need to check this stat), the lack of a centralized “Thick” WHOIS database for these registries reflects a significant burden on the consumer looking for accurate and complete contact information for a given owner or operator of a website.

To start, a consumer may pick one of the sites from the Google results above. Once they enter the domain name into the WHOIS tool they may not find the WHOIS record at that site. Since each registrar is required to only maintain the WHOIS information for the domains that they register or manage, a consumer must know to either look up the Thin WHOIS data at the registry to determine the relevant registrar who maintains the Thick WHOIS data, or the consumer must randomly check the WHOIS at multiple registrars hoping that the data will be there. Since not all registrars work together and share Thick WHOIS information, this second procedure can be problematic. All in all, the situation presents consumers unfamiliar with the

DNS and WHOIS database structure, as the great majority will be, with unreasonable expectations and unfair challenges.

One example:
When looking up **Guoxuwang.com** there was no WHOIS information returned in a WHOIS query at MarkMonitor.com or Enom.com. (October 31, 2011) NSI.com and GoDaddy.com returned the Thin WHOIS information Some registrars will provide a message similar to the following when the WHOIS record cannot be retrieved;
Whois Server Version 2.0
Domain names in the .com and .net domains can now be registered
with many different competing registrars. Go to http://www.internic.net for detailed information.
 When this occurs the individual can access the Thin WHOIS record at the registry site Internic.net if it was not provided by a previous lookup. The Thin WHOIS record will provide the name of the registrar and the URL for the WHOIS server.
An example of a Thin WHOIS records is provided below for the domain name ICANN.COM:

Domain Name: ICANN.COM
Registrar: GODADDY.COM, INC.
Whois Server: whois.godaddy.com
Referral URL: http://registrar.godaddy.com
Name Server: A.IANA-SERVERS.NET
Name Server: B.IANA-SERVERS.NET
Name Server: C.IANA-SERVERS.NET
Name Server: D.IANA-SERVERS.NET
Name Server: NS.ICANN.ORG
Status: clientDeleteProhibited
Status: clientRenewProhibited
Status: clientTransferProhibited
Status: clientUpdateProhibited
Updated Date: 19-oct-2011
Creation Date: 14-sep-1998
Expiration Date: 18-oct-2020

A consumer desiring complete contact details for the owner/operator of the ICANN.com domain name would then need to access the URL for the WHOIS server indicated in the Thin WHOIS in this case whois.godaddy.com.

Thick WHOIS record
Registrant:
ICANN

4676 Admiralty Way #330
Marina del Rey, California 90292
United States

Registered through: GoDaddy.com, Inc. (http://www.godaddy.com)
Domain Name: ICANN.COM
Created on: 13-Sep-98
Expires on: 18-Oct-20
Last Updated on: 19-Oct-11

Administrative Contact:
Administrator, Domain domain-admin@icann.org
ICANN
4676 Admiralty Way #330
Marina del Rey, California 90292
United States
+1.4242171313 Fax -- +1.4242171313

Technical Contact:
Administrator, Domain domain-admin@icann.org
ICANN
4676 Admiralty Way #330
Marina del Rey, California 90292
United States
+1.4242171313 Fax -- +1.4242171313

Domain servers in listed order:
NS.ICANN.ORG
A.IANA-SERVERS.NET
B.IANA-SERVERS.NET
C.IANA-SERVERS.NET
D.IANA-SERVERS.NET

Registry Status: clientDeleteProhibited
Registry Status: clientRenewProhibited
Registry Status: clientTransferProhibited
Registry Status: clientUpdateProhibited

Sometimes the URLs pointed to by the Thin WHOIS record do not resolve and the consumer is forced to search the registrar site for a link to the correct or updated WHOIS tool. This requires knowledge and determination by the consumer that is burdensome and seemingly unnecessary.

Appendix H:

Glossary

The following terms are excerpted from the ICANN Glossary for their application to the WHOIS service. For the full Glossary, please refer to:
http://www.icann.org/en/general/glossary.htm

Advisory Committee

An Advisory Committee is a formal advisory body made up of representatives from the Internet community to advise ICANN on a particular issue or policy area. Several are mandated by the ICANN Bylaws and others may be created as needed. Advisory committees have no legal authority to act for ICANN, but report their findings and make recommendations to the ICANN Board.

ALAC - At-Large Advisory Committee

ICANN's At-Large Advisory Committee (ALAC) is responsible for considering and providing advice on the activities of the ICANN, as they relate to the interests of individual Internet users (the "At-Large" community). ICANN, as a private sector, non-profit corporation with technical management responsibilities for the Internet's domain name and address system, will rely on the ALAC and its supporting infrastructure to involve and represent in ICANN a broad set of individual user interests.

[…]

ARIN - American Registry for Internet Numbers

ARIN is a Regional Internet Registry (RIR), and is a non-profit membership organization established for the purpose of the administration and registration of Internet Protocol (IP) addresses in North America, parts of the Caribbean, and sub-Saharan Africa.

ASO - Address Supporting Organization

The ASO advises the ICANN Board of Directors on policy issues relating to the allocation and management of Internet Protocol (IP) addresses. The ASO selects two Directors for the ICANN Board.

ccNSO - The Country-Code Names Supporting Organization

The ccNSO is in the process of being established, with the ccNSO Assistance Group preparing the recommendations that are currently under discussion. Upon completion, the purpose of the ccNSO is to engage and provide leadership in activities relevant to country-code top-level domains (ccTLDs). This is achieved by 1) Developing policy recommendations

to the ICANN Board, 2) Nurturing consensus across the ccNSO's community, including the name-related activities of ccTLDs; and 3) Coordinating with other ICANN SO's, Committees, or constituencies under ICANN. The ccNSO selects one person to serve on the board.

CCTLD - Country Code Top Level Domain

Two letter domains, such as .uk (United Kingdom), .de (Germany) and .jp (Japan) (for example), are called country code top level domains (ccTLDs) and correspond to a country, territory, or other geographic location. The rules and policies for registering domain names in the ccTLDs vary significantly and ccTLD registries limit use of the ccTLD to citizens of the corresponding country.

Some ICANN-accredited registrars provide registration services in the ccTLDs in addition to registering names in .biz, .com, .info, .name, .net and .org, however, ICANN does not specifically accredit registrars to provide ccTLD registration services.

For more information regarding registering names in ccTLDs, including a complete database of designated ccTLDs and managers, please refer to http://www.iana.org/cctld/cctld.htm.

DNS - Domain Name System

The Domain Name System (DNS) helps users to find their way around the Internet. Every computer on the Internet has a unique address - just like a telephone number - which is a rather complicated string of numbers. It is called its "IP address" (IP stands for "Internet Protocol"). IP Addresses are hard to remember. The DNS makes using the Internet easier by allowing a familiar string of letters (the "domain name") to be used instead of the arcane IP address. So instead of typing 207.151.159.3, you can type www.internic.net. It is a "mnemonic" device that makes addresses easier to remember.

GAC - Governmental Advisory Committee

The GAC is an advisory committee comprising appointed representatives of national governments, multi-national governmental organizations and treaty organizations, and distinct economies. Its function is to advise the ICANN Board on matters of concern to governments. The GAC will operate as a forum for the discussion of government interests and concerns, including consumer interests. As an advisory committee, the GAC has no legal authority to act for ICANN, but will report its findings and recommendations to the ICANN Board. The Chairman of the GAC is Heather Dryden of Canada.

gTLD - Generic Top Level Domain

Most TLDs with three or more characters are referred to as "generic" TLDs, or "gTLDs". They can be subdivided into two types, "sponsored" TLDs (sTLDs) and "unsponsored TLDs (uTLDs), as described in more detail below.

In the 1980s, seven gTLDs (.com, .edu, .gov, .int, .mil, .net, and .org) were created. Domain names may be registered in three of these (.com, .net, and .org) without restriction; the other four have limited purposes.

Over the next twelve years, various discussions occurred concerning additional gTLDs, leading to the selection in November 2000 of seven new TLDs for introduction. These were introduced in 2001 and 2002. Four of the new TLDs (.biz, .info, .name, and .pro) are unsponsored. The other three new TLDs (.aero, .coop, and .museum) are sponsored.

Generally speaking, an unsponsored TLD operates under policies established by the global Internet community directly through the ICANN process, while a sponsored TLD is a specialized TLD that has a sponsor representing the narrower community that is most affected by the TLD. The sponsor thus carries out delegated policy-formulation responsibilities over many matters concerning the TLD.

A Sponsor is an organization to which is delegated some defined ongoing policy-formulation authority regarding the manner in which a particular sponsored TLD is operated. The sponsored TLD has a Charter, which defines the purpose for which the sponsored TLD has been created and will be operated. The Sponsor is responsible for developing policies on the delegated topics so that the TLD is operated for the benefit of a defined group of stakeholders, known as the Sponsored TLD Community, that are most directly interested in the operation of the TLD. The Sponsor also is responsible for selecting the registry operator and to varying degrees for establishing the roles played by registrars and their relationship with the registry operator. The Sponsor must exercise its delegated authority according to fairness standards and in a manner that is representative of the Sponsored TLD Community.

GNSO - Generic Names Supporting Organization

The GNSO is the successor to the responsibilities of the Domain Name Supporting Organization (DNSO; see below) that relate to the generic top-level domains.

The GNSO is the body of six constituencies, as follows: the Commercial and Business constituency, the gTLD Registry constituency, the ISP constituency, the non-commercial constituency, the registrar's constituency, and the IP constituency.

IANA - Internet Assigned Numbers Authority

The IANA is the authority originally responsible for the oversight of IP address allocation, the coordination of the assignment of protocol parameters provided for in Internet technical standards, and the management of the DNS, including the delegation of top-level domains and oversight of the root name server system. Under ICANN, the IANA continues to distribute addresses to the Regional Internet Registries, coordinate with the IETF and others to assign protocol parameters, and oversee the operation of the DNS.

ICANN - The Internet Corporation for Assigned Names and Numbers

The Internet Corporation for Assigned Names and Numbers (ICANN) is an internationally organized, non-profit corporation that has responsibility for Internet Protocol (IP) address space allocation, protocol identifier assignment, generic (gTLD) and country code (ccTLD) Top-Level Domain name system management, and root server system management functions. Originally, the Internet Assigned Numbers Authority (IANA) and other entities

performed these services under U.S. Government contract. ICANN now performs the IANA function. As a private-public partnership, ICANN is dedicated to preserving the operational stability of the Internet; to promoting competition; to achieving broad representation of global Internet communities; and to developing policy appropriate to its mission through bottom-up, consensus-based processes. The DNS translates the domain name you type into the corresponding IP address, and connects you to your desired website. The DNS also enables email to function properly, so the email you send will reach the intended recipient.

IDNs - Internationalized Domain Names

IDNs are domain names that include characters used in the local representation of languages that are not written with the twenty-six letters of the basic Latin alphabet "a-z". An IDN can contain Latin letters with diacritical marks, as required by many European languages, or may consist of characters from non-Latin scripts such as Arabic or Chinese. Many languages also use other types of digits than the European "0-9". The basic Latin alphabet together with the European-Arabic digits are, for the purpose of domain names, termed "ASCII characters" (ASCII = American Standard Code for Information Interchange). These are also included in the broader range of "Unicode characters" that provides the basis for IDNs.

The "hostname rule" requires that all domain names of the type under consideration here are stored in the DNS using only the ASCII characters listed above, with the one further addition of the hyphen "-". The Unicode form of an IDN therefore requires special encoding before it is entered into the DNS.

The following terminology is used when distinguishing between these forms:

A domain name consists of a series of "labels" (separated by "dots"). The ASCII form of an IDN label is termed an "A-label". All operations defined in the DNS protocol use A-labels exclusively. The Unicode form, which a user expects to be displayed, is termed a "U-label". The difference may be illustrated with the Hindi word for "test" -- □□□□□ -- appearing here as a U-label would (in the Devanagari script). A special form of "ASCII compatible encoding" (abbreviated ACE) is applied to this to produce the corresponding A-label: xn--11b5bs1di.

A domain name that only includes ASCII letters, digits, and hyphens is termed an "LDH label". Although the definitions of A-labels and LDH-labels overlap, a name consisting exclusively of LDH labels, such as"icann.org" is not an IDN.

IETF - Internet Engineering Task Force

The IETF is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. It is open to any interested individual.

IP - Internet Protocol

The communications protocol underlying the Internet, IP allows large, geographically diverse

networks of computers to communicate with each other quickly and economically over a variety of physical links. An Internet Protocol Address is the numerical address by which a location in the Internet is identified. Computers on the Internet use IP addresses to route traffic and establish connections among themselves; people generally use the human-friendly names made possible by the Domain Name System.

ISP - Internet Service Provider

An ISP is a company, which provides access to the Internet to organizations and/or individuals. Access services provided by ISPs may include web hosting, email, VoIP (voice over IP), and support for many other applications.

PDP - Policy Development Process

A set of formal steps, as defined in the ICANN bylaws, to guide the initiation, internal and external review, timing and approval of policies needed to coordinate the global Internet's system of unique identifiers.

Phishing

Phishing attacks use both social engineering and technical subterfuge to steal consumers' personal identity data and financial account credentials. Social engineering schemes use spoofed emails to lead consumers to counterfeit websites designed to trick recipients into divulging financial data such as credit card numbers, account usernames, passwords and social security numbers.

Hijacking brand names of banks, e-retailers and credit card companies, phishers often convince recipients to respond. Technical subterfuge schemes plant crimeware onto PCs to steal credentials directly, often using Trojan keylogger spyware. Pharming crimeware misdirects users to fraudulent sites or proxy servers, typically through DNS hijacking or poisoning.

Registrar

Domain names ending with .aero, .biz, .com, .coop, .info, .museum, .name, .net, .org, and .pro can be registered through many different companies (known as "registrars") that compete with one another. A listing of these companies appears in the Accredited Registrar Directory.

The registrar you choose will ask you to provide various contact and technical information that makes up the registration. The registrar will then keep records of the contact information and submit the technical information to a central directory known as the "registry." This registry provides other computers on the Internet the information necessary to send you e-mail or to find your web site. You will also be required to enter a registration contract with the registrar, which sets forth the terms under which your registration is accepted and will be maintained.

Registry

The "Registry" is the authoritative, master database of all domain names registered in each Top Level Domain. The registry operator keeps the master database and also generates the "zone file" which allows computers to route Internet traffic to and from top-level domains anywhere in the world. Internet users don't interact directly with the registry operator; users can register names in TLDs including .biz, .com, .info, .net, .name, .org by using an ICANN-Accredited Registrar.

RIPE and RIPE NCC - Réseaux IP Européens

RIPE is an open and voluntary organization, which consists of European Internet service providers. The RIPE NCC acts as the Regional Internet Registry (RIR) for Europe and surrounding areas, performs coordination activities for the organizations participating in RIPE, and allocates blocks of IP address space to its Local Internet Registries (LIRs), which then assign the addresses to end-users.

Root Servers

The root servers contain the IP addresses of all the TLD registries - both the global registries such as .com, .org, etc. and the 244 country-specific registries such as .fr (France), .cn (China), etc. This is critical information. If the information is not 100% correct or if it is ambiguous, it might not be possible to locate a key registry on the Internet. In DNS parlance, the information must be unique and authentic.

SSAC - Security and Stability Advisory Committee

The President's standing committee on the security and stability of the Internet's naming and address allocation systems. Their charter includes a focus on risk analysis and auditing. SSAC consists of approximately 20 technical experts from industry and academia as well as operators of Internet root servers, registrars, and TLD registries.

SO - Supporting Organizations

The SOs are the three specialized advisory bodies that will advise the ICANN Board of Directors on issues relating to domain names (GNSO and CCNSO) and, IP addresses (ASO).

TLD - Top-level Domain

TLDs are the names at the top of the DNS naming hierarchy. They appear in domain names as the string of letters following the last (rightmost) ".", such as "net" in "www.example.net". The administrator for a TLD controls what second-level names are recognized in that TLD. The administrators of the "root domain" or "root zone" control what TLDs are recognized by the DNS. Commonly used TLDs include .com, .net, .edu, .jp, .de, etc.

UDRP - Uniform Dispute Resolution Policy

All ICANN-accredited registrars follow a uniform dispute resolution policy. Under that policy, disputes over entitlement to a domain-name registration are ordinarily resolved by court litigation between the parties claiming rights to the registration. Once the courts rule who is

entitled to the registration, the registrar will implement that ruling. In disputes arising from registrations allegedly made abusively (such as "cybersquatting" and cyberpiracy"), the uniform policy provides an expedited administrative procedure to allow the dispute to be resolved without the cost and delays often encountered in court litigation. In these cases, you can invoke the administrative procedure by filing a complaint with one of the dispute-resolution service providers.

For more details on the UDRP, see the ICANN UDRP page and the FAQs.

WHOIS

WHOIS (pronounced "**who is**"; not an acronym) An Internet protocol that is used to query databases to obtain information about the registration of a domain name (or IP address). The WHOIS protocol was originally specified in RFC 954, published in 1985. The current specification is documented in RFC 3912. ICANN's gTLD agreements require registries and registrars to offer an interactive web page and a port 43 WHOIS service providing free public access to data on registered names. Such data is commonly referred to as "WHOIS data," and includes elements such as the domain registration creation and expiration dates, nameservers, and contact information for the registrant and designated administrative and technical contacts.

WHOIS services are typically used to identify domain holders for business purposes and to identify parties who are able to correct technical problems associated with the registered domain.